**EFFICACY REVIEW**
by Mark Suarez, Entomologist - IB

24 Nov 2004

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| **DATE:** | 26 August 2004 |
| **EPA REG. NUMBER:** | 279-3206 |
| **PRODUCT NAME:** | Talstar TC Flowable Termiticide/Insecticide |
| **REGISTRANT:** | 279; FMC Corp., Agricultural Products Group |
| **RM:** | George LaRocca, PM13 |
| **REVIEWER:** | BeWanda Alexander |
| **DECISION #.:** | 339770 |
| **DP BARCODE:** | 299257 |
| **ACTION:** | 305; Data Required, Technical |
| **ACTIVE INGREDIENT(S):** | 128825, Bifenthrin.....7.9% |
| **TYPE:** | |
| **OPPTS GUIDELINE(S):** | 810.1000<br>810.3000<br>810.3300<br>810.3500 |
| **MRID:** | 46180901 |
| **GLP ?:** | No. |
| **SITES:** | Premise, Interior Crack and Crevise |
| **PESTS:** | Bedbug, *Cimex lectularius* |
| **APPLICATION RATE:** | 1.26 gal/1000sq ft. @ 0.0025%<br>1.26 gal/1000sq ft. @ 0.005%<br>1.26 gal/1000sq ft. @ 0.01% |
| **LABEL RATE:** | 0.02 – 0.06% applied as a liquid |

**STUDY SUMMARIES:**

The study was a direct spray laboratory evaluation of the registered product at three application rates: 0.0025, 0.005, and 0.01% diluted formulation in distilled water applied at a volume of 1.26 gal registered formulation/1000 sq. ft. Four replicated were run for each of the treatments and the control. In each treatment, five bedbugs (*Cimex lectularius*) were dosed with the insecticide in Petri dishes. Filter paper was inserted under the bedbugs following application to absorb excess liquid. Control animals were sprayed in the same manner with distilled water. Insects were maintained at ambient temperature, humidity, and light conditions. Mortality/morbidity was assessed at 2 hours post-treatment.

The results are provided below, in Table 1.

| AI Concentration (%) | ppm | 2 Hours Post-Treatment | |
|---|---|---|---|
| | | Moribund (%) | Mortality (%) |
| 0 | 0 | 0 | 0 |
| 0.0025 | 25 | 15 | 85 |
| 0.005 | 50 | 10 | 90 |
| 0.01 | 1000 | 15 | 85 |

Table 1. Morbidity and Mortality as a result of Bifenthrin Exposure. Dependent variables are reported as mean percentages.

**ENTOMOLOGIST'S COMMENTS AND RECOMMENDATIONS:**

The formulation tested is efficacious at the label rate as a direct spray against bedbugs, *Cimex lectularis*. However, it is not efficacious at the 90% level as typically required for insecticidal claims against public health pests. The similarity in mortality data across the treatments may indicate that the formulation would not prove more efficacious at the label rate of 0.02 to 0.06%.

Label claims for control are unproven with a 2 hour direct spray study. Residual activity of the formulation must be proven to validate these claims.

As bedbugs are a possible a vector of both hepatitis B and American trypanosomiasis (Chagas disease) and anaphylactoid reactions have been documented, the relaxation of public health pest efficacy requirements are not warranted.

The following recommendations are made with respect to label claims for bedbugs:

- A contact kill label claim is acceptable, conditionally. The submission of supporting efficacy data at the label rate should be required. These data need to verify that the formulation provides 90%, or greater, mortality within a short time (e.g., 24 hours; 2 hours for quick kill claims).
- Control claims are not supported by the data submitted. These claims should be removed from the label, unless corroborative data are provided or cited.
- Residual claims are not supported. Remove Data consistent with this application pattern must be submitted to include these claims. Bedbugs should be exposed to treated surfaces (e.g., plywood panel), which are treated and weathered for at least as long as any residual claim.

Enclosure
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